

CLAIMS

1. Cerebral electrostimulation device
containing at least one commutation device comprising:
 - switching means comprising
5 electromechanical bistable switches included in a
microelectromechanical system,
 - at least one input and several outputs
each connected to at least one biocompatible electrode
or at least one active area of a biocompatible
10 electrode, the commutation device being used to
selectively connect at least one input to one or more
outputs.
2. Cerebral electrostimulation device
15 according to claim 1, the commutation device also
containing one or more antennas.
3. Cerebral electrostimulation device
according to either claim 1 or 2, also containing one
20 control device external to the commutation device
capable of controlling or programming the commutation
device by radio and / or electrical signals.
4. Cerebral electrostimulation device
25 according to claim 3, the control device containing
remote transmission means.
5. Cerebral electrostimulation device
according to claim 3, the control device containing

remote transmission means to send radio frequency signals.

6. Cerebral electrostimulation device
5 according to one of claims 3 to 5, also containing means capable of programming the control device.

7. Cerebral electrostimulation device
according to one of claims 1 to 6, also containing
10 power supply means for supplying power to the commutation device.

8. Cerebral electrostimulation device
according to claim 7, the power supply means including
15 a power supply integrated in the commutation device.

9. Cerebral electrostimulation device
according to either claim 7 or 8, the power supply means comprising a remote power supply device.

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10. Cerebral electrostimulation device
according to claim 9, in which the remote transmission device comprises at least one energy source external to the commutation device, capable of supplying energy to
25 the commutation device in the form of a radio wave and energy collection means integrated into the commutation device capable of picking up said energy, the energy source being integrated into the control device.

30 11. Cerebral electrostimulation device
according to one of claims 1 to 10, the electrostimulation device comprising stimulation

electrodes and / or measurement electrodes and / or a combination of stimulation electrodes and measurement electrodes.

5 12. Cerebral electrostimulation device according to one of claims 1 to 11, also comprising at least one stimulator and / or one measurement device.

10 13. Cerebral electrostimulation device according to claim 12, comprising at least one stimulator provided with an integrated power supply.

15 14. Cerebral electrostimulation device according to either claim 12 or 13, the stimulator comprising one or more channels connected to one or more inputs of the commutation device.

20 15. Cerebral electrostimulation device according to one of claims 12 to 14, comprising at least one measurement device with one or more channels connected to one or more inputs of the commutation device.

25 16. Cerebral electrostimulation device comprising at least one interconnection device including:

- switching means comprising electromechanical bistable switches included in a microelectromechanical system,
- 30 - at least one input, and several outputs each connected to at least one biocompatible electrode or at least one active area of a biocompatible

electrode, the interconnection device used to connect each of one or more predetermined inputs to one or more predetermined outputs.

5 17. Cerebral electrostimulation device according to claim 16, also comprising at least one stimulator.

10 18. Cerebral electrostimulation device according to claim 17, the stimulator being provided with an integrated power supply.

15 19. Cerebral electrostimulation device according to one of claims 1 to 18, in which the commutation device or the interconnection device comprises several inputs, the commutation device being used to connect each input to one or more outputs.

20 20. Cerebral electrostimulation device according to one of claims 1 to 19, the commutation device or interconnection device being biocompatible.

25 21. Cerebral electrostimulation device according to one of claims 1 to 20, the commutation device or interconnection device comprising switching means.

30 22. Cerebral electrostimulation device according to claim 20, in which the switching means are arranged in matrix form.

23. Method for treating cerebral pathologies comprising the steps of:

a) implanting several electrodes in a patient skull such that at least one of the active areas of the electrodes at least partially comes into contact with a target region of the brain,

b) connecting the electrodes to at least one commutation device of a cerebral electrostimulation device as claimed in claims 1 to 22.

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24. Method for treating cerebral pathologies, according to claim 23, comprising after step b) the step of: - placing said commutation device subcutaneously.

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25. Method for treating cerebral pathologies, according to claim 23 or 24, comprising after step b), the step of: - detecting a target region of the brain to be stimulated by testing in turn the active areas of said electrodes.

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26. Method for treating cerebral pathologies, according to claim 24 or 25, the commutation device being controlled or programmed from outside by a control device integrating a remote transmission device.

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27. Method for treating cerebral pathologies, according to claim 24 to 26, the step consisting of replacing said commutation device by an interconnection device as claimed in claims 16 to 22.

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28. Method for treating cerebral pathologies, according to one of claims 23 to 27, the target region of the brain being a region of the subthalamic nucleus.

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29. Method for treating cerebral pathologies, according to one of claims 23 to 28, the pathology being Parkinson's disease or epilepsy.

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